UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,790	06/27/2003	Alan Michael Jaffee	7302	6842

7590 11/27/2007

JOHNS MANVILLE
Legal Department
10100 West Ute Avenue
Littleton, CO 80127

EXAMINER	
STEELE, JENNIFER A	
ART UNIT	PAPER NUMBER
1794	
MAIL DATE	DELIVERY MODE
11/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/608,790	JAFFEE, ALAN MICHAEL	
	Examiner	Art Unit	
	Jennifer Steele	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7,9,11-29 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7,9,11-29 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In view of the Appeal Brief filed on 9/14/2007, PROSECUTION IS HEREBY REOPENED. Appellant's cited that Examiner did not include the Gill reference in the 35 USC 103(a) rejection to claims 18-22 with respect to Lehnert in view of Graves and Kajander and the 35 USC 103(a) rejection to claims 16 and 25-28 with respect to Lehnert in view of Carbo. A New Grounds of Rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Terrel Morris/
Terrel Morris
Supervisory Patent Examiner
Group Art Unit 1794

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claim 1-3, 5, 7, 9, 11-23, 25-29, 31-33 rejected under 35 U.S.C. 103(a) as being unpatentable over Lehnert (US 4,647,496) in view of Graves (US 5,389,716) in further view of Gill (US 4,637,951).** Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat (ABST). Lehnert teaches a gypsum core that has one or more additives, which improves the water resistance of the gypsum core. Lehnert teaches glass fibrous mats of good porosity made from chopped fiber in a resinous binder (col. 9, lines 5-38). Lehnert teaches fibrous mats that are capable of forming a strong bond with the set gypsum. Lehnert teaches fibrous mats of materials such as mineral-type glass fibers and synthetic resin fibers that can be of continuous or discrete strands or fibers and can be woven or nonwoven form. Nonwoven mats such as chopped strand mat can be used. The preferred mat is a fiber glass mat comprising fiber glass filaments oriented in random pattern and bound together with a resin binder such as those known commercially as Dura-Glass by Manville (col. 9, lines 17-38). Lehnert teaches a resinous binder of "modified urea –formaldehyde" (col. 14, lines 35-37). Lehnert differs from the current application and does not teach the fiber sizes

of the glass fibrous mats. Lehnert differs from the current application and does not teach a blend of fibers sizes.

Graves teaches a fire resistant bonder for fibrous mats where the mats are comprised of glass fibers or mineral fibers (col. 2, lines 34-36). Graves teaches fibrous mats may be applied as backing layer to plywood, gypsum and other similar structural materials (col. 3, lines 32-35). Graves teaches fibers that can be formed into mats including glass fibers, mineral fibers, graphite fibers, metal fibers and organic fibers (col. 9, lines 24-35). Graves teaches glass fibers improve the structural foundation of the finished mat by increasing its tear resistance and tensile strength and improve the folding and working quality of the mat (col. 10, lines 4-50). Graves teaches fibers of varying sizes may be blended together to form the mat and by varying the length and diameter of the fibers the structural properties of the finished product can be altered. Graves teaches fiber sizes and teaches the fiber sizes and blends referring to Gill (col. 11, lines 11-33). A blend of base fibers and microfibers results in a mat that is more porous than mats produced by previously known methods and is better suited for use as a substrate for subsequently applied coatings such as a vinyl flooring. Graves refers to Patent No. 4,129,674 to Hannes that utilizes two different sizes of glass fibers. This mat is formed of monofilament glass fibers with elongated glass fiber bundles wherein the bundles reinforce the mat and improve tear resistance.

Gill teaches a fibrous mat that is a blend of glass fibers with a majority of base fibers and a minority of micro fibers that are bonded together with a resinous binder (ABST). The majority of base fibers are chopped glass fibers and have an average micron size of 10 microns which is in the claimed range of 11 +/- 1.5 micron (ABST, col. 3, lines 12-21). Gill teaches a second type of fiber referred to as glass micro fiber that have an average diameter of one micron which is in the

range of the claimed range of less than 5.5 micron. Gill teaches glass micro fibers that are staple fibers (col. 3, lines 45-46). The glass micro fibers comprise between 5% and 20% of the total weight of the blend (col. 2, lines 14-16).

It would have been obvious to one of ordinary skill in the art to employ the fiber sizes and fiber size blend compositions of Graves and Gill in the gypsum board facers of Lehnert, motivated to produce a gypsum board with porous fibrous facers.

As to claim 2 and 3, Lehnert does not teach chopped glass fibers selected from the group consisting of E glass, C glass, T glass, sodium borosilicate glass and mixtures thereof. Lehnert does not teach fine staple fibers are composed of C glass. Graves teaches the glass fibers are obtained from conventional "E" glass and derivatives thereof including "A" glass, "C" glass, "S" glass and "T" glass (col. 10, lines 4-11). Graves teaches the fibers are chopped glass fibers. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the glass fiber types of Graves in the fibrous mats facers of Lehnert motivated to produce a gypsum board with a strong structural foundation and with good tear resistance.

As to claim 5 and 7, Lehnert differs from the current application and does not teach the length of the glass fibers in the fibrous mats. Graves teaches chopped glass fibers that are about 1 mm to about 75 mm in length (col. 10, lines 16-19) and a preferred embodiment that the fibers are substantially uniform in length within the range of about 12 mm to 4 mm and preferably 19 mm in length. Gill teaches the chopped glass fibers have an average fiber length ranging from about ¼ to 1 inch, which is 6.4 to 25.4 mm and is in the range of 5 to 30 mm and 6 to 12 mm of the claimed invention. It would have been obvious to one of ordinary skill in the art at the time

the invention was made to optimize the fiber length motivated by Graves and Gill fibrous glass mats for use as facers for gypsum structural board.

As to claim 9, Lehnert teaches chopped glass fibers (col. 9, lines 23-25). Lehnert differs and does not teach fine staple fibers. Graves and Gill teach fine staple fibers that are glass fibers.

As to claim 11, Lehnert differs and does not teach fine staple fibers are composed of C-glass. Graves teaches blends of fibers and staple fibers, as referenced to Gill. Grave teaches "C" glass fibers. It would have been obvious to one of ordinary skill in the art to employ a fine staple fiber produced of "C" glass motivated by Graves fibrous mat facers for use in structural gypsum board.

As to claims 12-14, Lehnert differs from the current application and does not teach fine staple fibers with the fiber diameter and length recited in claims 12-15. Gill teaches the average micro fiber diameter is less than 1 micron and the average length range between 1/8 and ¼ inch which is 3.2 to 6.4 mm and in the range of the claimed fine staple fibers (col. 3, lines 57-58).

As to claim 15, Lehnert differs from the current application and does not teach a blend of fiber sizes. Graves references Gill for teaching blends of fiber sizes and Gill teaches composition of the minor portion, (fine staple fibers), of 2-37%. Gill teaches the greater percentage of microfiber (fine staple fiber), the greater the density and the lower the porosity. It would have been obvious to employ the composition of fibers sizes motivated to optimize the porosity of the glass fibrous mat.

As to claim 17, Lehnert teaches a structure with a first and second facer comprising a fibrous mat.

As to claims 18, Lehnert teaches a resinous binder of "modified urea –formaldehyde" (col. 14, lines 35-37).

As to claim 32 and 34, Lehnert teaches a porous fibrous glass mat as a first and second facer. Lehnert differs from the current application and does not teach the air permeability of the mat. Graves references Gill and teaches that, the properties of the fibrous mat can be optimized through varying fiber blends in the mat, (col. 11, lines 10-26 of Graves). Gill discloses air permeability in the range of 180-220 cfm, however Gill does not disclose the permeability per square foot of mat and does not disclose the permeability per test method ASTM D737 at 0.5 inches of water. Gill teaches that porosity can be optimized by the composition of microfibers and chopped fibers (col. 6, lines 10-22). Gill teaches that the porosity is measured by the Frazier Air Permeability test (col. 5, lines 10-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the blends of fibers of Gill motivated by Graves and Gill teachings to improve or obtain the desired porosity of the gypsum board.

As to claim 33, Lehnert teaches Portland cement and poly(vinyl acetate), poly(vinyl chloride) and acrylic resins for use in the gypsum core that are effective additives to improve water resistance (col.10, lines 6-25). Portland cement is a hydraulic set material and meets the limitations of claim 33. Lehnert further teaches hydraulic set materials and teaches panels with cement based cores of hydraulic cement or Portland cements (col. 2, lines 38-57).

2. **Claims 18-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Lehnert (US 4,647,496) in view of Graves (US 5,389,716) and Gill (US 4,637,951) and in further view of Kajander et al. (US 6,723,670).** Lehnert teaches a fibrous mat-faced gypsum board

comprised of a gypsum core that is sandwiched between two sheets of glass mat (ABST). As to claim 18, Lehnert teaches a resinous binder of "modified urea –formaldehyde" (col. 14, lines 35-37). As to claim 19, Lehnert differs from the current application and does not teach a modified acrylic latex binder. Lehnert differs from the current application and does not teach a resinous binder comprising a melamine formaldehyde cross-linker with a glass transition temperature between 15-45°C.

Graves teaches a fire resistant bonder for fibrous mats where the mats are comprised of glass fibers or mineral fibers (col. 2, lines 34-36). Graves teaches typical binder systems for glass fibers include urea-formaldehyde, phenolic resins, bone glue, polyvinyl alcohols, acrylic resins and polyvinyl acetates. Graves teaches a binder composition comprising a stable mixture of a fire resistant latex preferably a halogenated latex polymer more preferably also carboxylated; an aqueous aldehyde condensation polymer-based thermosetting resin, preferably an urea-aldehyde thermosetting resin (col. 2, lines 35-40). A thermosetting resin is a crosslinking resin.

Kajander teaches foam coated nonwoven fibrous mat particularly suited for a facer on gypsum wallboards (ABST). Kajander teaches a mat primarily of glass fibers with a minor portion of resinous binder (ABST). Kajander teaches conventional resinous binders of modified urea formaldehyde as well as a melamine formaldehyde, a latex containing mixture of cross linked vinyl chloride acryl ate copolymer having a glass transition temperature as high as about 113°F (45°C) and preferably about 97°F (36°C) and a small amount of stearylated melamine.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a thermosetting, crosslinking binder in the fibrous glass mat of Lehnert

motivated to improve the properties of the bond mat and gypsum board. It further would have been obvious to employ a binder with a relatively high glass transition temperature of Kajander motivated to improve the heat resistance of the gypsum board. It would have been obvious to employ a crosslinking agent of the amount of 2 to 5 to 10% motivated to optimize the glass transition temperature of the binder.

3. **Claims 16 and 25-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Lehnert (US 4,647,496) in view of Graves (US 5,389,716) and Gill (US 4,637,951) in further view of Carbo (US 2004/0209071).** Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat (ABST). Lehnert teaches gypsum sheathing and gypsum core of wallboard and building materials where the gypsum has many desirable characteristics such as fire-resistant properties and water resistance. Lehnert teaches conventional gypsum wallboard that is covered with paper sheets and Lehnert teaches the disadvantages of water seepage through paper. Lehnert teaches that paper facers were known in the art in the art at the time the invention was made. Paper facers are considered inclusive of Kraft paper. Lehnert differs from the current application and does not teach reinforcing fiber and does not teach a biocide in the gypsum core.

Carbo teaches a mold resistant acoustical panel, ceiling tile and wall materials. Carbo teaches gypsum is a preferred material in the panel because if provides surface hardness and fire resistance [0021]. Carbo teaches fillers including reinforcing fibers that are cellulosic and fibers of mineral wool [0023]. Carbo teaches an antimicrobial agent or biocide such as zinc pyrthione can be added to the gypsum panel core [0027] and [0029].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ reinforcing fibers and a biocide in the gypsum core of the building material of Lehnert motivated to produce a building material that is resistant to mold and stronger. It further would have been obvious to employ a gypsum core that is fire resistant as taught by Carbo. When the reference discloses all the limitations of a claim except a property or function, and the examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention the examiner has basis for shifting the burden of proof to applicant as in In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980). See MPEP § § 2112- 2112.02.

Response to Arguments

4. Applicant's arguments with respect to claim 1-3, 5, 7, 9, 11-23, 25-29, 31-33 have been considered and previous office action rejection is withdrawn in view of the new ground(s) of rejection with respect to Lehnert in view of Graves and Gill. As Graves incorporates Gill by reference and Graves is drawn to glass fibrous mats used for facers in structural board including gypsum board, Graves provides the motivation to use the features of the fibrous mat of Gill in the gypsum board structure of Lehnert.

5. Applicant argues that the combination of Lehnert and Gill does not disclose or suggest every feature of the gypsum board of independent claims 1 and 29, the fibrous mat of claims 31 or the hydraulic set board of claim 33. Examiner has presented new grounds of rejection with respect to Lehnert in view of Graves and Gill and arguments are moot in view of the new grounds of rejection. Applicant states that Lehnert calls for facers that are porous glass fiber

mats and Lehnert discloses gypsum that penetrates "but part-way into the thickness of the mat" of one board face and "substantially through the thickness of the mat" at the other face. And it is said to be necessary for the mats to be permeable to allow the high water content of the gypsum slurry to be extracted as liquid of vapor during the production and board curing (col. 9, lines 8-16 of Lehnert). Applicant states that Lehnert does not contain any disclosure or suggestion concerning the sizes and types of glass fibers to be used. Lehnert discloses a gypsum board with glass fibrous mats that are porous and permeable to allow water from gypsum to be extracted and allows the gypsum to penetrate partially and substantially through the thickness of the mat. Lehnert teaches the properties of porosity and penetration of gypsum through the mat. The arguments with respect to these properties are not commensurate with the scope of the claims. Wherein the structure and features of a material are disclosed and the examiner cannot determine whether the material inherently possesses these properties, burden is shifted to the applicant to disprove the assertion that the properties are inherent.

6. Examiner has cited Gill for teaching the feature of glass fiber size, specifically, two types of glass fiber sizes for use in a glass fibrous mat for use in building materials. Applicant states that Gill is directed to one fiber size between 8 and 25 micron and another fiber size, microfiber, that have a mean diameter in the neighborhood of 1 micron (col. 3, lines 7-12, 27-30 of Gill). Gill discloses in the abstract that the base fibers have a mean diameter of ten (10) microns. Applicant's claim 1 recites the limitation of chopped glass fibers with an average diameter of 11 +/- 1.5 microns. Applicant submits that the teachings of Gill would lead to the selection of the smallest possible fiber because Gill teaches that the lower diameter limit is set by process restraints and the upper limit is determined by material usage considerations as well as

the hand or feel of the final mat material because coarser fibers result in an abrasive and irritating feel. Examiner respectfully disagrees with the interpretation that these statements alone or in combination are a teaching to select the smallest possible fiber. As such, Gill discloses a mean fiber diameter (10 micron) which is closer to the lower end of the range of 8 to 25 microns, however this is not equated with an average fiber diameter of 8 micron as the Applicant suggests. The disclosure of the prior art does not suggest using values that are patently distinct form the instant claims. Even if smaller values are desired by the art, they still teach to employ values within the claimed ranges, which renders the claims as presented unpatentable.

7. Applicant further states that there is no disclosure that would teach or suggest, or controvert applicant's surprising and unexpected finding that a mat having such a size of base fibers larger than the minimum of Gill's base fibers can be used to produce gypsum board having a smooth surface, that can directly accept paint in an aesthetically pleasing manner. This argument is not commensurate with the scope of the claims. Applicant has not recited a gypsum board having a smoother surface.

8. Applicant argues that the fibrous mat provided by Gill is used for an entirely different purpose than the applicant's mat and specifically states that the Gill mat is said to be especially useful when forming composite materials employing a curable thermoset. Applicant states that the Gill disclosure is devoid of any reference to gypsum or other cementitious construction board. Examiner has provided new grounds of rejection wherein the current application is considered obvious over Lehnert in view of Graves and Gill. As Graves incorporates Gill by reference and Graves is drawn to glass fibrous mats used for facers in structural board including

gypsum board, Graves provides the motivation to use the features of the fibrous mat of Gill in the gypsum board structure of Lehnert.

9. Applicants state that Gill's mat resists strikethrough and therefore has low porosity. Applicant's arguments are moot in view of new grounds of rejection.

10. Applicant continues to state that nothing in Gill relates to board materials in which water is extracted during board curing. This argument is not commensurate with the scope of the claims. The Applicant is not reciting a limitation that the glass fibrous mat in which water vapor is extracted during board curing.

11. Applicant states that the binder of Gill is diametrically opposite to the disclosed use. This argument is moot in view of new grounds of rejection. Applicant presents that the Declaration under 37 CFR 1.132, paragraphs 27 and 28, concerning the combination of Gill and Lehnert where Mr. Jaffee states that the invention of Gill is intended to impede any penetration of fluids from the sheet core through the mat facer and that "any mat produced in accordance with the disclosure of Gill as being unsuitable as a facer mat to be incorporated in gypsum or hydraulic set board of which necessarily comprises the extraction of excess water since the permeability of the mat would have impeded such water extraction." Examiner has presented new grounds of rejection with respect to Lehnert in view of Graves in further view of Gill. Graves teaches a glass fibrous mat for use with gypsum board. Graves references Gill to teach the use of blends of fibers and fibers sizes that are within the range of the current application. As presented in this office action, Examiner has not relied upon Gill for teaching the binder of the current application.

12. Applicant maintains that the Gill mat's low permeability is no mere incidental or optional feature. Examiner agrees that the air permeability of Gill is a critical feature. As cited above, Gill is relied upon to teach a glass fibrous mat with two different fibers sizes. Gill teaches the amount of microfiber size imparts a controlled degree of porosity of the mat and teaches the greater percentage of microfiber results in a greater density and a lower porosity material (col. 6, lines 10-20). In this respect, Gill provides a teaching that optimizing the composition of the fiber sizes can control the porosity of the fibrous mat.

13. Applicant argues that air permeability data of Gill and the air permeability data as disclosed in the Applicant's inventions could be compared with the knowledge of fluid flow and elementary physics. Examiner agrees that the disclosure of air permeability in Gill with the units of 220 cuft/sec could be a typographical error and therefore will be equated with 220 cuft/min. Applicant directs the Examiner to air permeability recited in example 2 of Gill as 180 cuft/min, in example 3 to be 220 cuft/min, measured at 5 inches of Miriam red oil with a specific gravity of 0.827. Applicants have converted the units of 5 inches of Miriam red oil to be equal to 4.1 inches of water. Applicant's air permeability is tested at 0.5 inches of water. Applicants conclude that at the higher test pressure, higher air permeability rates will be achieved indicating that the 180 and 220 cuft/min results of Gill would be lower and not higher if tested at 0.5 inches of water. The burden of proof is upon the Applicant to provide comparative data that the claimed invention provides unexpected results. Examiner maintains that Gill provides a teaching of using different fiber sizes to optimize the air permeability of the fibrous mats and that one of ordinary skill in the art would be able to use this teaching to produce a mat with the desired air permeability with the expectation of predictable results.

14. Applicant argues that a suitable selection of glass fibers comprising a particular blend of fiber sizes permits fabrication of a mat that has a surprising and unexpected smooth surface that facilitates direct painting. Applicant cites the specification, pg. 19 for comparative data with respect to smoothness wherein the Applicant has compared the smoothness of the current application with the smoothness of the mats of Lehnert and states that the smoothness if the current invention are rated 7 and 5 and the smoothness of Lehnert is rated a 4. This argument is not persuasive and the comparative data does not present a finding of unexpected results. The difference between the smoothness of 4 of Lehnert versus the smoothness of 5 of the current invention would not be considered substantially unexpected results. Further, based on the teachings of Gill, it would have been obvious to optimize the fiber sizes and blends to achieve the desired smoothness.

Applicant submits that the ability to directly paint the present gypsum board establishes that the smoothness is a difference in kind and not just degree. However, the examiner finds that the ability to paint the gypsum board as well as the property of smoothness are limitations that are not commensurate with the scope of the claims. Applicant is not claiming a paintable gypsum board, nor is applicant claiming a smooth board. Applicant is claiming a board with glass fibrous mat facers that have the structure of Lehnert and the fiber sizes of Gill.

Applicant submitted further comparative data on smoothness by way of a 1.132 Declaration of 12/26/2006. The Declaration under 37 CFR 1.132 filed 12/26/2006 is insufficient to overcome the rejection of claim 1-3, 5, 7, 9, 11-23, 25-29, 31-33 based upon 35 USC § 103(a) as set forth in the last Office action because: The evidence is not commensurate in scope with the claims in that independent claim 1 is not limited to a particular fiber length and claim 1

covers a range of amounts of 1-30 and the unexpected results are not shown over the entire claimed range. This data is presents 4 test results wherein samples (1) –(3) are produced in the applicants test laboratory under similar production conditions with varying average fiber diameter and average fiber lengths and sample (4) is material produced under the trade name Dura-Glass® and would be consistent with the Lehnert fibrous mat. The results are presented as standard error wherein the applicant's invention would be equated with sample (2) and has the lowest standard error of 7.6%. The other results are 9.5%, 8.3% and 9.3%. This comparative data is insufficient to show a case of unexpected results as only 4 samples have been tested with a difference in standard error of 1.3% as the minimum and 1.9% as the maximum. With respect to Applicants arguments that a sufficient number of tests can be determined on a case-by-case analysis, Applicants disclose testing mats with fiber diameters in ranges centered around 16, 15, 13, 11 and 8 micron and fiber lengths of about 25, 25, 19, 12 and 6 mm. However test results are limited to average fiber diameter of 13, 11, 8 and 11 with fiber lengths of 19, 12, 9 and 19. Test results of the broader range of samples with data inside and outside of claimed invention would have provided a showing of sufficient evidence as well as multiple data points of the similar samples.

15. Applicant maintains that the claims 1-29 and 31-33 are not obvious over Lehnert and Gill under the standard applied in KSR. Applicant's arguments are moot in view of new grounds of rejection presented in this office action.

16. Applicant argues that the combination of Lehnert and Gill does not disclose a mat as per claim 32, which recites the limitation of air permeability of at least 250 cfm/ft^2. Applicant's arguments are moot with respect to new grounds of rejection presented in this office action.

Applicant refers to the air permeability of 250 cfm/ft^2 as high and the air permeability of Gill to be low. Gill discloses air permeability in the range of 180-220 cfm, however Gill does not disclose the permeability per square foot of mat and does not disclose the permeability per test method D737. Wherein the terms high and low are relative terms and the units and test methods differ, Examiner cannot determine whether the invention inherent possesses the properties of the claimed invention. Gill provides a teaching that the blend of microfibers and fibers affects the porosity as measured by the Frazier Air permeability test and that the fibrous mat and the blend compositions can be varied to produce the desired results. Therefore Gill provides a finding that one of ordinary skill in the art could have pursued the known potential options with a reasonable expectation of success with reasonably predicable results.

17. Applicants submit that claims 2-3,5,7,9,11-23 and 25-28 are patentable for at least the same reasons as claim 1 from which they depend. As Applicant contends there is no basis to combine Lehnert and Gill, Examiner has provided a new ground of rejection with respect to Lehnert in view of Graves and Gill. Examiner maintains that Gill is relied upon for teaching the fiber sizes in the glass fibrous mats and Gill provides a teaching with respect to fiber size. Applicants define the air permeability of Gill to be low. Low is a relative term and does not distinguish the invention of Gill from the current application.

18. Applicant submits that the addition of Graves fails to cure the failure of Lehnert and Gill. Applicant's arguments are not persuasive and Examiner has presented new grounds of rejection with respect to Lehnert in view of Graves and Gill. Graves teaches glass fibrous mats that are useful as a backing layer to plywood, gypsum and other similar structural materials (col. 3, lines 32-33 of Graves). Graves is relied upon to teach the feature of specific types of glass fibers,

fibers obtained from "E", "A", "C", "S" and "T" glass. Graves teaches the feature of a fire resistant binder and fire resistant fibers. Graves further teaches the fiber sizes in the range of the current application and has incorporated Gill by reference and therefore teaches the fiber sizes and blends of Gill. Graves teaches fibers of varying sizes may be blended together to form the mat and by varying the length and diameter of the fibers the structural properties of the finished product may be altered. Graves teaches that varying the fibers sizes and blends can affect porosity, hand, feel, abrasiveness, and tensile strength and tear resistance. Graves does not teach smoothness of gypsum board, however Graves teaches that fibers with larger dimensions would tend to give the finished mat an abrasive hand or feel (col. 11, lines 11-20 of Graves). Graves continues to state that the blend of fibers and fibers sizes of Gill produces a more porous mat and one that is better suited for use as a substrate for coatings such as vinyl flooring. Wherein paint is also known to be a coating, Graves provides a teaching that the fiber sizes and blends provide a mat more suited to be coated.

19. Applicant states the gypsum board of claims 18-22 meets the conditions for patentability, and should not be subject to rejection under 35 USC 103(a) as being unpatentable over US Patents 4,647,496 and 5,389,716 and 6,723,670. Applicant states that this rejection does not include Gill as applied to claim 1 and therefore fails to establish obviousness. Examiner has provided new grounds of rejection with respect to Lehnert in view of Graves and Gill and in further view of Kajander.

Applicant states that the reference to Kajander includes a foamed facer as an integral part of its production. Kajander is directed to a gypsum wallboard with a glass fibrous facer and a foam coating applied to the facer. Kajander is relied upon for teaching a melamine

formaldehyde crosslinking binder that has a crosslinking temperature in the 36°C-45°C. Kajander is not relied upon for teaching the claimed fiber sizes and blends. Kajander provides a finding that it would have been known in the art to employ a melamine formaldehyde binder in a fibrous glass mat for use gypsum and insulation wallboard.

20. Applicant states the gypsum board of claims 16 and 25-28 meets the conditions for patentability and should not be subject to rejection under 35 USC 103(a) as being unpatentable over US Patent 4,647,496 and US Patent Publication 2004/0209071.

Applicant has stated that there is no reference to Gill and Carbo does disclose a mixture of chopped glass fibers and a minor portion of fine staple fibers. Examiner has provided new grounds of rejection with respect to Lehnert in view of Graves and Gill and in further view of Carbo.

Applicant states that claim 25 patentably define over Lehnert and Carbo. Claim 25 is stated "A gypsum board as recited by claim 1, wherein said gypsum core further comprises at least one water repellant agent". Lehnert teaches a gypsum core with water resistance and employs wax asphalt emulsion and poly(vinyl alcohol) and wax-asphalt emulsion (col. 10, lines 6-65 of Lehnert).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Steele whose telephone number is (571) 272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./

/Elizabeth M. Cole/
Primary Examiner, Art Unit 1794

11/15/2007